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ABSTRACT

Twenty-one nonverbal autistic children, 4- to 9-years-old, with language ages of 4- to 24-months, participated in the communication learning program from 1 to 3 years. Simultaneous verbal and manual signs were chosen as the communications mode. The children initially displayed infrequent, unrecognizable vocalizations (Screeches, or vocal twiddles), failed to role play, used objects repetitively and nonfunctionally, and showed either little affect or self-aggressiveness. A behavioral framework with reinforcement included rewards, such as food, tokens, and social approbation. Parents attended weekly meetings and also observed training sessions. A day school was developed, consisting in supervised group work for short periods, and gross motor activities (roller skating, swimming, or art activities), and later evolved into three levels and more extensive tasks. Initially the children imitated all teacher hand movements, repeated questions and added answers, repeated only key words, or directed questions meant for other children to teachers. Later (still signing manually), children instructed themselves before performing, generated sentences comparable to 2 and 3 year olds', labeled other children's inappropriate behaviors, helped one another, mastered personal pronouns, and had an estimated vocabulary range of 101 to 370 words (a gain of over 100 words in a year). Some children began to mouth words, verbally approximate words, and three children could verbalize "hi" or "bye". Behavioral assessment indicated increase in social activity, decrease in self stimulation, higher levels of play, and attempts to play with classmates. (MC)

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Language Development in Nonverbal Autistic Children[1] Using a Simultaneous Communication System

Margaret Procyk Creedon[2]

Autistic children and children with autistic type behaviors are viewed as multiply-handicapped and having language and perceptual motor dysfunctions (Wing & Wing, 1971; Reichler & Schopler, 1971; Ornitz, 1970.) Therapeutic and educational programs are challenged to provide appropriate environments for the cognitive and affective growth of children who are unable to interact, lack functional verbal language and have limited body language.

A communication/learning program was developed for nonverbal autistic children. The chosen form of communication was a simultaneous system, verbal or spoken language with manual signs (signed English). The initial rationale was behaviorally based on: a need for the most expedient form of communication, a form that could be shaped from existing behaviors (hand posturing), and a form that provided many opportunities for consequences to be attached.

The 21 children who have participated in the program since 1969 for 1 to 3 year periods were evaluated by a multi-disciplinary team. Diagnostic findings prior to the program indicated that the children were functioning at a severely retarded level. Some of the children were formally "untestable"; this is considered a significant prognosticator of later function (Rutter, 1960) and institutionalization. On the Mecham Scale, their language age

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equivalents were 4 to 24 months at chronological ages of 4 to 9 years. Their vocalizations were infrequent and unrecognizable, consisting of screeches or vocal twiddles. The children also met the criteria of DeMyer and Churchill for early infantile autism. They failed to engage in role play and demonstrated nonfunctional repetitive use of objects. The children engaged in fleeting or no eye contact and demonstrated little affect. Some of the children were aggressive and tantrumous when their rituals were interrupted; 4 of the children were self-aggressive.

The program was first used with children seen individually for 1 to 3 hourly sessions per week. A day school was developed, June 1971, for children unable to attend a community school which would implement the simultaneous communication format. Currently, there are 3 classes or levels in the program including a half day pre-school program. The daily format had consisted of supervised group work and individual work with a teacher for 15-20 minutes during the morning session; afternoon session included gross motor activities such as roller skating, swimming, park activities and art projects. Currently, the children work in changing groups with 2 to 9 members during the morning session. Briefly, their activities include labeling, perceptual-motor tasks, pre-reading and primary reading skills, counting, typing, greeting, attendance and calendar routines.

The program operates within a behavioral framework using high positive reinforcement. In the first year, rewards included food, tokens and activities. Social reward was continually used and now includes peer applause.

Parent participation in the communication system was crucial. Parents attended weekly meetings as well as several observation days at the school.

All the children who have been exposed to this approach have used signs for their immediate needs and affective states. They have varied in acquisition

rates and ability to combine words in sentence form. The process of learning to communicate has followed the same sequence among all the children to date. In the early stages of learning signs, the children were echopraxic. That is, they imitated all the hand movements of the teacher. They would also repeat a question but then add the answer. Often they would repeat only key words such as "color" from the question "What color is that?" Some children have inhibited this behavior; it still occurs when a new concept or demand is presented. At times, it appears as if they were "thinking" out the question on their hands. Children beginning to write, sign first and then print what they have signed, letters or numbers. During rest times, a child has signed the colors of balloons on the wall. At table tasks, children will sign "the same", "stop" or "sit down"; they instruct themselves. The children have demonstrated egocentric language as described by Piaget (1926) for normal speaking children.

The children have spontaneously combined two words. After a child has a small labeling vocabulary or begins to combine signs himself, simple sentence structure is introduced. The sentences are expanded through a chaining procedure with pivot words and phrases. The children have spontaneously added or changed their learned sentences. They have also generated simple sentences which they have not heard from their teachers. Children have begun to spontaneously identify their own work, e.g. "That is a red train." to describe a row of attached blocks. Some sentences the children have generated convey meaning but indicate gaps in their vocabulary. For example, "Jacket is sick." was signed to report a broken zipper. The labeling of affect has also become spontaneous and suggests an awareness of others and their feelings. A child described a classmate who does not like taking a turn and who was laughing in

his seat with this sentence. "E. is happy with sit down." The socialized speech of the children has included 5 of 6 classes of response (Johnson et al, 1963) in the form of adapted information, questions, answers, emotionally toned remarks and social phrases. They have not used dramatic imitation of speech or sounds. They do however, emphasize manually such words as "stop" or "help".

The children's beginning communications were directed to their teachers even when it was a command or reaction to another child. The children then began to address other signing adults and initiate brief conversations. At first, such "conversations" would simply be descriptive statements about the child or adult; for example, "Flower shirt." "Have new pants", etc. This maintained an interaction controlled by the child. Some of the children also reported on other children or teachers, e.g. "E. is sick. E. is home." "Shaaron is different school." As signing to themselves began to control their behavior, the children began copying commands from the teachers. Now they can spontaneously sign commands or classroom rules to other children. Recently, sentences such as "R is silly.", "L is a baby." have been used by the children to label another child's inappropriate behavior. The offending child incidentally has become more responsive to such signed peer criticism; however, he still may not accept being pulled back into line by his shirttails.

Each child delights in being the "leader" and telling everyone to "stand up", etc. Some children have spontaneously helped other children sign during group activities. One child now corrects his mother's diction. The children also enjoy telling the teacher "wrong".

The vocabulary list for most of the children included foods, affective states, colors, clothing, activities, animals. All of the current group of the children have learned body parts, personal pronouns and proper names. The

communication skills of children currently attending full day sessions has been summarized in Table 1 and 2 to describe their range of language competence. 4 boys completing their second year of school (20 months) and 4 boys completing their first term (10 months) are included.

Insert Table 1 and 2 about here

The estimated vocabulary range of the current school group is 101 to 370 words, like a speaking 2½ year old's vocabulary. It represents gains of over 100 words in less than 1 year, following the pattern of beginning talkers. Grammatically, the children use sentences comparable to 2 and 3 year olds. They use two word sentences with pivots in the initial and final position, differentiated pivots including articles, numbers, demonstrators with nouns, transformations including possessive, negative, interrogative, "wh" question, imperative, auxiliary "be", adjectives, adverb, pronoun, conjunction, infinitival complement ("to"), forms and prepositions. (Sample sentences in Appendix A). They have been exposed to verb tense and contractions but are not yet expected to use them. With these exceptions, nothing new emerges in the normal child's speech except for the consistency of use of the grammatical forms (Northwestern University, 1965).

The mean length of sentence has been considered a reliable quantitative measure of linguistic maturity (McCarthy, 1954). The mean sentence length of the 5 longest and different responses was derived from the language sample for one month (February 1973). The range was 4.6 words to 7.8 words. This corresponds to performance of under 2 years to 3 years according to Templin's normative date (Johnson et al.) The children's longest individual sentences were from 6 to 14 words.

The children's correct use of personal pronouns is particularly significant. Verbal autistic children experience great difficulty in mastering

pronomial reversal. The concrete reference of the signs, "I", "you", and "my" has probably facilitated their mastery and no errors in use for the school group.

Some of the children have begun to mouth words while they are signing. 4 of the full day school children spontaneously approximated words or intonation of a word or phrase. Over the past year, consonants have become clearer and some words are quite distinct. A child seen individually can approximate entire complex sentences while signing. Of course, this is highly rewarded behavior. However, it is not demanded until a child has consistently used the word himself. 3 of the children in the pre-school class have begun using "hi", "bye" and other approximations. The younger children have increased their vocal behavior. The boys over 7 have not demonstrated any consistent speech; occasional approximations have been reported for only one boy. The other boys have decreased screeching and vocal twiddles. They do, however, laugh or giggle at more audible levels.

The relationship between communication skills and behavior was also investigated. Behaviors were recorded during observation of independent or minimally supervised activities. The behaviors were (1) self-stimulation, stereotyped repetitive behaviors (2) social nonverbal behavior (3) low appropriate play (4) high appropriate play and (5) social but inappropriate behavior. Daily reports by the teachers of the children's spontaneous interaction with peers were classified according to the child's ability: initiation, acceptance, or parallel play. The data suggest an increase in social activity in all the children, dramatic decrease in self stimulation, higher levels of play and more constructive use of objects. Children with more signs have made many attempts to play with their classmates, including simple chase games, wrestling, etc. They have demonstrated little parallel play.*

*This information will be described in a future report.

The children appear to have developed a sense of competence. The simultaneous communication system has offered them an alternative mode of expression for language as communication and as a facilitation for concept formation, establishing self-image and direction.

Table 1.
Age and Language Evaluation for Children
in Current Day School.

CHILD	CURRENT AGE	LANGUAGE AGE - MECHAM SCALE AT TIME OF EVALUATION
In School 20 Months		
DA	9	18 Mos. at 6 Yrs. 2 Yrs. 1 Mo. at 7 Yrs. 2 Mos.
LO	8	4 Mos. at 4 Yrs. 8 Mos.
DO	8	10 Mos. at 5 Yrs. 10 Mos.
ER	7	6 Yrs. at 4 Yrs. 4 Mos.
In School 10 Months		
RI	4	10 Mos. at 3 Yrs.
HO	6	19 Mos. at 5 Yrs. 1 Mo.
MA	6	27 Mos. at 5 Yrs. 2 Mos.
VI	5	11 Mos. at 3 Yrs. 9 Mos.

Table 2.
Measures of Spontaneously Used Signed Language
for Children in Day School, February, 1973.

CHILD	ESTIMATED VOCABULARY	NUMBER OF WORDS IN LONGEST SENTENCE	MEAN SENTENCE LENGTH	GRAMMATICAL STRUCTURE*
DA	350 Words	9	6.6	1,2,3,4-1,4-2,4-3,4-4, 4-6,4-9,4-10,4-11,4-12, 5,6.
LO	370 Words	8	6.0	1,2,3,4-2,4-3,4-4,4-6, 4-9,4-10,4-11,4-12,5,6.
DO	244 Words	7	4.8	1,2,3,4-6,4-8,4-9, 4-10,4-11,4-12,5,6.
ER	130 Words	6	4.6	1,2,4-6,4-9,4-12,6.
RI	297 Words	14	7.8	1,2,3,4-1,4-2,4-4,4-5, 4-6,4-7,4-9,4-10,4-11, 4-12,5,6.
HO	294 Words	9	7.6	1,2,3,4-1,4-2,4-4,4-5, 4-6,4-7,4-9,4-10,4-11, 4-12,5,6.
MA	210 Words	10	6.6	1,2,3,4-4,4-6,4-9,4-10, 4-11,4-12,5,6.
VI	101 Words	8	4.6	1,4-6,4-9,4-10,4-12,6.

*GRAMMATICAL STRUCTURE

1. Two-word utterance showing grammatical structure (more sandwich)
2. Pivot word ("that", "this", "a")
3. Differentiated pivots with nouns ("a glass")
4. Transformations
4-1. Possessive ("my")
4-2. Negative ("not")
4-3. Interrogative ("is..?")
4-4. "Wh" question ("What..?")
4-5. Contraction ("don't")
4-6. Imperative ("sit down")
4-7. Auxiliary "Be" ("is sitting")
4-8. Do ("did read")
4-9. Adjective ("blue circle")
4-10. Pronoun ("I")
4-11. Conjunction ("and")
4-12. Infinitival complement ("to have help")
5. Adverb ("Who is here today?") ("I am ready.")
6. Prepositions ("On the table")

References

Johnson, W., Darley, F.L. and Spriestersbach, D.C. Diagnostic Methods in Speech Pathology. New York: Harper & Row, 1963.

McCarthy, Dorothea "Language development in Children," in Leonard Carmichael, Manual of Child Psychology, New York: Wiley, 1954. Chap. 9.

Northwestern University, Speech Department. The Development of Syntactic Structures from 1½ to 6 years, Evanston, Illinois: 1965.

Ornitz, E.M. Vestibular dysfunction in schizophrenia and childhood autism. Comp. Psychiatry 1970,2, 159-173.

Piaget, J. The Language and Thought of the Child. New York: Harcourt, Brace, 1926.

Reichler, R.J. and Schopler, E. Observations on the nature of human relatedness. J. of Autism and Childhood Schizophrenia 1971,1,283-296.

Rutter, M. Prognosis: Psychotic children in adolescence and early adult life. in J. K. Wing (ed) Early Childhood Autism. Oxford: Pergamon Press, 1966. pp. 83-99.

Wing, Lorna & Wing, J.K. Multiple impairments in early childhood autism. J. of Autism & Childhood Schizophrenia 1971,1,256-266.

APPENDIX A

Sample Sentences for Children
in Communication/Learning Program, February, 1973 (N-5)

MA

I, Ma, want to have more hot dog please.
I, Ma, want to stand up and go to desk.
I, Ma, am here today.
That is the black cat.
Everybody clap for Ma.

DA

I, Da, want to have more apple juice please.
I, Da, want to be the leader.
We are finished with numbers.
The book is on the table.
No, Vi, is not here today.

LO

I, Lo, want to have help with zipper.
I, Lo, want to stand up.
We will work with numbers.
How many circles here?
It is time to work with Bonnie. (Teacher)

HO

I, Ho, want to have more graham cracker please.
I, Ho, want to put up the bird.
I, Ho, am finished with the card.
That is my, Ho, big book.
Put the paper plate under the paper cup.

RI

I, Ri, want to stand up and go to my, Ri, chair with desk.
I, Ri, want to be the leader.
I, Ri, want to have more chocolate cookie please.
That is a yellow bird.
Yes, Ma, is quiet.

DO

I, Do, want to have fruit please.
I, Do, want to move chair.
I, Do, finished with pencil.
Barbara is home. (Teacher)
That is train.

ER

I, Er, want to have turn.
I, Er, want to build.
Everybody stand up.
I, Er, want to have help.
Bye-bye, Mrs. Candy. (Teacher)

VI

I, Vi, am finished.
I, Vi, want to have help with shoe.
Vi is quiet.
I, Vi, want to have lotion.
Hello, Barbara. (Teacher)